

**Internet Appendix to
"Performance and Persistence in Institutional Investment
Management"***

This appendix contains supplementary results referred to in the published article. Included are tables showing cross-sectional variation in average performance, cumulative performance persistence (including analysis after accounting for backfill bias), and the relationship between cashflows and returns.

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Table IA.I
Cross-sectional Variation in Average Performance

We calculate performance for each individual product as either the benchmark-adjusted excess return or the factor model alpha. Panel A reports the average of these numbers (in percent per quarter) across products grouped by investment style. Panel B presents the results of a single cross-sectional regression of four-factor alphas ($\hat{\alpha}_p$) on product characteristics (Z_p):

$$\hat{\alpha}_p = \gamma_0 + \gamma_1 Z_p + u_p .$$

Perf Dummy is equal to one if the product has performance-based fees, ResExternal is the percent of research from external sources, NumResAnal is the number of research analysts, NumTrdr is the number of traders, PhD Dummy is equal to one if there are any Ph.D.'s in the firm, PortMangExpr is the number of years of experience of the portfolio manager, and NumEmpl is the total number of employees. We calculate all variables as averages over the entire sample period (where data are available). The regression also includes unreported style dummies. *t*-statistics appear in parentheses below the coefficients. The sample period is 1991 to 2008.

	Benchmark-adjusted	Factor model alphas			
	returns	1 factor	3 factors	4 factors	7 factors
Panel A: Average Performance by Style					
All Cap Core	0.56	0.55	0.33	0.17	0.20
All Cap Growth	0.84	0.36	1.06	0.36	0.59
All Cap Value	0.43	0.88	0.18	0.37	0.41
Large Cap Core	0.47	0.30	0.21	0.27	0.14
Large Cap Growth	0.65	0.05	0.56	0.26	0.02
Large Cap Value	0.29	0.55	-0.04	0.22	0.18
Mid Cap Core	0.28	0.84	0.30	-0.04	-0.05
Mid Cap Growth	0.57	0.60	0.96	0.11	0.29
Mid Cap Value	0.22	1.12	0.26	0.29	0.45
Small Cap Core	0.49	1.10	0.07	-0.09	0.21
Small Cap Growth	1.12	0.54	0.74	0.07	0.64
Small Cap Value	0.30	1.36	0.02	0.16	0.46

Panel B: Cross-sectional Regressions

	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	0.324 (3.64)	0.393 (3.74)	0.523 (2.98)	0.481 (2.77)	0.482 (2.76)	0.490 (2.81)
Portfolio Size	0.000 (0.05)		-0.005 (-0.52)			
Perf Dummy	-0.084 (-2.56)	-0.599 (-1.69)	-0.095 (-2.48)	-0.101 (-2.64)	-0.103 (-2.70)	-0.106 (-2.76)
<i>Research-related variables</i>						
ResExternal	-0.248 (-2.94)	-0.324 (-3.52)	-0.335 (-3.32)	-0.324 (-3.23)	-0.312 (-3.07)	-0.318 (-3.14)
Log(NumResAnal)					0.013 (1.11)	
<i>Trading-related variables</i>						
Average Turnover			-0.035 (-1.27)	-0.037 (-1.32)	-0.035 (-1.26)	-0.041 (-1.46)
Log(NumTrdr)				0.003 (0.29)		0.022 (1.32)
<i>Human capital-related variables</i>						
PhD Dummy	0.070 (2.04)	0.074 (2.00)	0.0803 (2.02)	0.080 (2.00)	0.080 (1.99)	0.079 (1.99)
Personnel Turnover			0.079 (1.00)	0.076 (0.96)	0.072 (0.91)	0.051 (0.64)
Log(PortMangrExpr)		-0.017 (-0.79)	-0.020 (-0.82)	-0.018 (-0.76)	-0.019 (-0.80)	-0.016 (-0.67)
Log(NumEmply)				0.006 (0.63)		
# observations	3,509	3,144	2,744	2,747	2,720	2,731
\bar{R}^2	0.02	0.02	0.03	0.03	0.03	0.03

Table IA.II
Cumulative Performance Persistence Across Deciles

We sort products in deciles according to the benchmark-adjusted return during the ranking period of one year. We hold the decile portfolios for post-ranking periods ranging from one to three years. We rebalance the portfolios at the end of every year. For horizons of greater than one year, the decile portfolios are a combination of the products sorted in the prior years (for example, the two-year decile is an equal-weighted average of the decile portfolios formed over each of the past two years). All alphas are in percent per quarter, and t -statistics are reported in parentheses next to alphas. Decile 1 contains the worst-performing products, and decile 10 contains the best-performing products. The sample period is 1991 to 2008.

Decile	1-year	2-year	3-year
Panel A: 1-factor Alphas			
1	0.44(1.70)	0.60(2.77)	0.59(2.79)
2	0.40(1.56)	0.50(2.21)	0.53(2.55)
3	0.34(1.67)	0.37(2.06)	0.43(2.55)
5	0.38(2.24)	0.40(2.47)	0.39(2.44)
8	0.49(2.45)	0.48(2.45)	0.43(2.23)
9	0.63(2.76)	0.50(2.31)	0.43(1.94)
10	0.78(1.79)	0.54(1.46)	0.48(1.35)
10-1	0.34(0.71)	-0.05(-0.15)	-0.11(-0.35)
Panel B: 3-factor Alphas			
1	0.08(0.37)	0.33(1.99)	0.32(2.06)
2	-0.01(-0.06)	0.13(0.72)	0.18(1.13)
3	0.05(0.29)	0.09(0.61)	0.18(1.25)
5	0.10(0.76)	0.14(1.06)	0.12(0.95)
8	0.23(1.48)	0.22(1.51)	0.18(1.21)
9	0.49(2.80)	0.31(2.08)	0.21(1.31)
10	0.96(2.79)	0.60(2.31)	0.50(1.86)
10-1	0.88(2.09)	0.27(0.95)	0.18(0.66)
Panel C: 4-factor Alphas			
1	0.30(1.36)	0.35(1.89)	0.29(1.64)
2	0.16(0.72)	0.15(0.72)	0.16(0.87)
3	0.19(0.96)	0.12(0.71)	0.16(1.03)
5	0.14(0.90)	0.12(0.83)	0.12(0.86)
8	0.07(0.40)	0.12(0.74)	0.10(0.61)
9	0.04(0.30)	0.09(0.57)	0.03(0.15)
10	0.00(0.00)	0.02(0.09)	-0.04(-0.14)
10-1	-0.30(-0.95)	-0.32(-1.21)	-0.32(-1.24)

Table IA.III**Performance Persistence Across Deciles After Accounting for Backfill Bias**

We first eliminate the first three years of returns for each product. We then sort products in deciles according to the benchmark-adjusted return during the ranking period of one year. We hold the decile portfolios for post-ranking periods ranging from one quarter to three years. We rebalance the portfolios at the end of every quarter when the holding period is one quarter and at the end of every year otherwise. All alphas are in percent per quarter, and t -statistics are reported in parentheses next to alphas. Decile 1 contains the worst-performing products, and decile 10 contains the best-performing products. The sample period is 1991 to 2008.

Decile	1 st quarter	1 st year	2 nd year	3 rd year
Panel A: 1-factor Alphas				
1	-0.02(-0.04)	0.23(0.72)	0.77(2.69)	0.59(1.83)
2	0.15(0.50)	0.26(0.85)	0.56(2.25)	0.54(2.32)
3	0.19(0.75)	0.24(0.95)	0.43(1.87)	0.55(2.41)
5	0.34(1.59)	0.33(1.75)	0.29(1.44)	0.13(0.52)
8	0.46(2.12)	0.47(2.10)	0.36(1.52)	0.31(1.24)
9	0.56(2.31)	0.57(2.53)	0.36(1.41)	0.30(1.09)
10	1.02(1.76)	0.61(1.31)	0.07(0.17)	0.25(0.60)
10-1	1.04(1.32)	0.38(0.68)	-0.69(-1.69)	-0.33(-0.83)
Panel B: 3-factor Alphas				
1	-0.50(-1.64)	-0.15(-0.61)	0.48(2.14)	0.34(1.21)
2	-0.25(-1.01)	-0.14(-0.58)	0.27(1.31)	0.28(1.46)
3	-0.16(-0.80)	-0.09(-0.49)	0.13(0.73)	0.29(1.55)
5	0.04(0.26)	0.06(0.46)	0.03(0.19)	-0.20(-1.20)
8	0.25(1.45)	0.24(1.38)	0.09(0.48)	0.01(0.03)
9	0.43(2.23)	0.44(2.50)	0.10(0.49)	0.01(0.04)
10	1.34(2.81)	0.76(1.95)	-0.10(-0.28)	0.02(0.04)
10-1	1.84(2.79)	0.91(1.89)	-0.58(-1.44)	-0.33(-0.77)
10-1	1.70(2.88)	0.88(2.09)	-0.35(-0.97)	-0.16(-0.47)
Panel C: 4-factor Alphas				
1	0.07(0.24)	0.08(0.29)	0.32(1.29)	-0.04(-0.14)
2	0.16(0.66)	0.05(0.20)	0.13(0.57)	0.09(0.47)
3	0.07(0.31)	0.07(0.32)	0.05(0.24)	0.08(0.42)
5	0.05(0.27)	0.09(0.61)	-0.02(-0.10)	-0.19(-1.02)
8	-0.04(-0.21)	0.01(0.04)	0.00(0.01)	-0.05(-0.24)
9	-0.05(-0.32)	0.05(0.34)	0.02(0.08)	-0.02(-0.08)
10	-0.06(-0.18)	-0.26(-0.87)	-0.28(-0.76)	-0.20(-0.47)
10-1	-0.13(-0.30)	-0.34(-0.91)	-0.60(-1.34)	-0.16(-0.34)

Table IA.IV
Cashflows and Returns

We estimate the following Fama-MacBeth cross-sectional regressions:

$$Y_{p,t+1} = \gamma_{0,t} + \gamma'_{1,t}[R_{p,t} - R_{b,t}, Cf_{p,t}, A_{p,t}, A_{p,t}^2, AFirm_{p,t}],$$

where $R_{p,t}$ is the return on portfolio p during year t , $R_{b,t}$ is the return on the benchmark b during year t , $Cf_{p,t}$ is the percentage cash flow into portfolio p during year t , $A_{p,t}$ is the (log of the) size of product p at the end of year t , $AFirm_{p,t}$ is the size of all products under the same investment management firm at the end of year t , and Style Dummies are dummies for investment styles. The dependent variable, Y , is cash flow or adjusted returns. We estimate the regressions annually, and the table presents time-series averages of the coefficients. The numbers in parentheses below the coefficients are their t -statistics, corrected for serial correlation in time-series estimates. When the future return adjustment is done using factor models, we also adjust the γ coefficients using the Shanken (1992) errors-in-variables correction. The sample period is 1991 to 2008.

Future return adjustment	Constant	Return	Cashflow	ProdSize	ProdSize ²	FirmSize
	Dependent variable is cashflows					
	0.717	1.845	0.129	-0.228	0.009	0.052
	(6.73)	(7.00)	(10.81)	(-6.17)	(3.28)	(7.38)
	Dependent variable is adjusted returns					
Benchmark	0.045	0.135	-0.001	-0.006	0.000	0.000
	(2.49)	(2.15)	(-1.05)	(-5.91)	(0.86)	(0.34)
1-factor	0.056	0.049	-0.001	-0.007	0.000	0.000
	(3.22)	(0.97)	(-0.55)	(-2.84)	(0.60)	(0.17)
3-factor	0.041	0.072	-0.001	-0.006	0.000	0.000
	(3.24)	(1.59)	(-0.45)	(-3.09)	(1.13)	(-0.26)
4-factor	0.035	0.064	-0.001	-0.007	0.000	0.000
	(1.55)	(1.01)	(-0.54)	(-2.10)	(1.61)	(-0.33)
7-factor	0.038	0.070	-0.001	-0.006	0.000	-0.001
	(2.29)	(1.26)	(-0.64)	(-2.23)	(1.35)	(-0.61)